$$\Sigma M_C = 0 : \quad 1.5 \times 100 - 1.2 \times 75 - 1.8 \times 175 + 300 \cdot B$$
$$= 0 \qquad B = 0.85$$
$$\Sigma F_y = 0 : \quad 1.5 + 1.2 + 1.8 - 0.85 - C = 0. \quad C = 3.65$$

$0 < x < 100$

$$\Sigma F_y = 0 = -1.5 - V \qquad V = -1.5 \, kN$$
$$\Sigma M = 0 \qquad 1.5x + M = 0 \qquad M = -1.5x.$$

$100 < x < 175$

$$\Sigma F_y = -1.5 + 3.65 - V = 0 \qquad V = 2.15$$
$$\Sigma M = 1.5 \cdot x - 3.65 (x - 100)$$
$$+ M = 0.$$
$$M = 2.15x - 365$$

$175 < x < 275$

$$\Sigma F_y = V - 1.8 + 0.85 = 0 \qquad V = 0.95$$
$$\Sigma M = 0.85 (400 - x) - 1.8 (275 - x)$$
$$- M$$
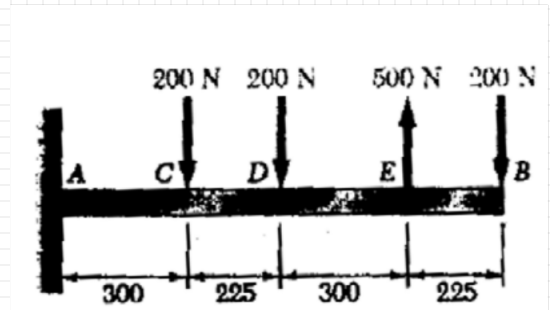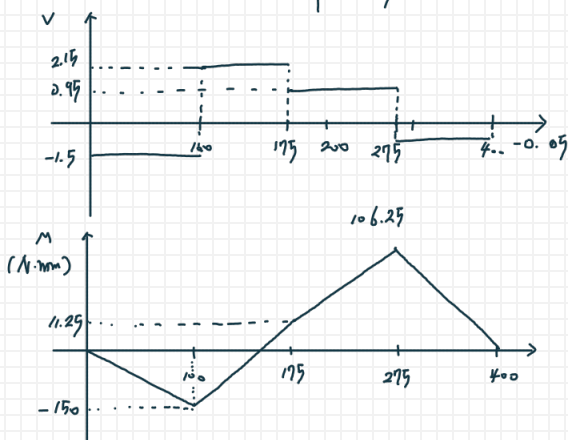$$\Rightarrow M = 0.95x - 155$$

$275 < x < 400$

$$\Sigma F_y = V + 0.85 = 0 \qquad V = -0.85$$
$$\Sigma M = 0.85 (400 - x) - M = 0$$
$$M = -0.85x + 340$$

B. $\quad V = 200 \, N$

E. $\quad V = 200N \quad -M - 0.225 \cdot 200 = 0$

$$M = -45 \, N \cdot m$$

D.

$$V + 500 - 200 = 0$$
$$V = -300N$$
$$-M + 0.3 \cdot 500 - 0.525 \cdot 200 = 0$$
$$M = 45 \, N \cdot m$$

C.

$$V - 200 + 500 - 200 = 0$$
$$V = -100N$$
$$-M - (0.225) 200$$
$$+ (0.525) 500$$
$$- 0.75 \times 200 = 0.$$
$$M = 67.5 \, N \cdot m$$

A.

$$V - 200 - 200 + 500 - 200 = 0$$
$$V = 100N$$
$$-M - 0.3 \times 20 - 0.525 \cdot 200$$
$$+ 0.825 \cdot 500$$
$$- 1.05 \cdot 200$$
$$M = 37.5 \, N \cdot m$$

Left Problem

3000N
3 kN

3000N
3 kN

kN·mm
450 N (m)

A ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮ B
C   D   E

| 300 | 200 | 200 | 300 |

R_A Dimensions in mm R_B

300   700   1000mm
= /m
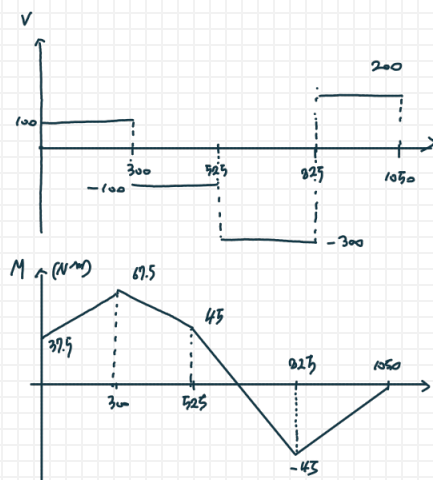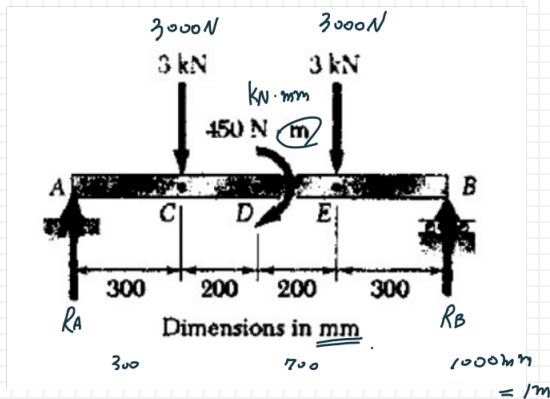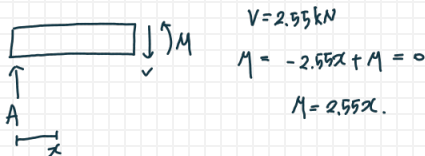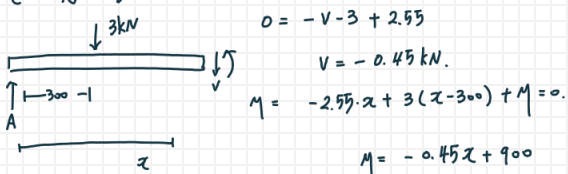
$$R_A = \left(\frac{7}{10} + \frac{3}{10}\right) 3000 - 450 = 2550 = 2.55 kN$$

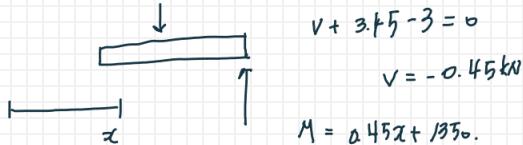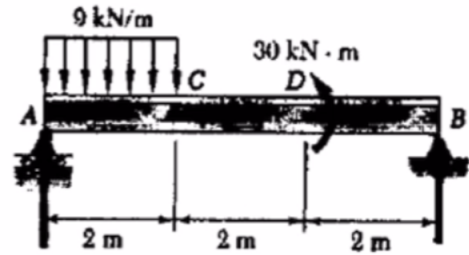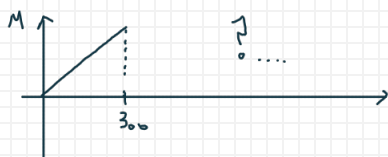$$R_B = \left(\frac{7}{10} + \frac{3}{10}\right) 3000 + 450 = 3450 = 3.45 kN.$$

A to C⁻

$V = 2.55 kN$

$M = -2.55x + M = 0$

$M = 2.55x.$

C⁺ to D⁻

↓ 3kN

$0 = -V - 3 + 2.55$

$V = -0.45 kN.$

$M = -2.55 \cdot x + 3(x - 300) + M = 0.$

$M = -0.45x + 900$

D⁺ to E⁻

$V + 3.45 - 3 = 0$

$V = -0.45 kN$

$M = 0.45x + 1350.$

E⁻ to B.

$V - 3 + 3.45 = 0 \qquad V = -0.45.$

$M: (3.45)(100 - x) - M = 0.$

$M = -3.45x + 345.$

V

2.55

-0.45

M

300

Right Problem

9 kN/m

30 kN · m

A ▮▮▮▮▮▮▮▮▮▮▮ C   D ▮▮▮▮ B

| 2 m | 2 m | 2 m |

$M_A = 0.$ $1 \times 18 + 6B = 0.$ $B = -3.$ ↓3

$M_B = 0.$ $-2A + 5 \times 18 = 0.$ $A = 18.$ ↑18

$0 < x < 4$

$F_y = 0.$ $18 - 9x - V = 0$ $V = 18 - 9x.$

$M_J = 0$ $18x - 9x \cdot \frac{x}{2} - M = 0.$

$M = -\frac{9}{2}x^2 + 9x.$

$4 < x < 6$

$V = 3.$ $0 = -M - (6-x) \cdot 3 + 30.$

$M = 3x + 12.$

V

3

-16

M